

## STUDIES IN THE CANTHARIDAE (Coleoptera)

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In the course of revisional studies of the genera of the Cantharidae, exclusive of the genus *Cantharis*, a number of new species have come into my possession, a few of which are herein described. It is hoped that these studies, along with those of Mrs. Dorothy Fender and Mr. J. W. Green<sup>1</sup> in the genus *Cantharis*, will give a better understanding of this neglected group. To facilitate comparisons with previous descriptions, I have tried to follow the style and terminology of previous students of the family.

### *Chauliognathus texanus* Fender, new species

Yellow: tibiae, tarsi, apical fourth to half of femora and apical third of elytra black; tibiae sometimes yellowish. Antennae piceous to yellowish, basal segment piceous in all specimens examined; third segment a little shorter than the fourth; the apex of each segment with a ring of long fine hairs, setaceous in *profundus*; scattered long hairs on the body of each segment. Head elongate oval, shining, finely punctured and sparsely pubescent. Thorax opaque, wider than head; nearly as long as wide in the male; wider in the female; sides evenly arcuate and shallowly reflexed; disc usually with an elongate black spot on each side, sometimes absent. Elytra slightly wider than thorax, parallel, moderately punctate and sparsely pubescent. Terminal segments of abdomen pale, with black markings in *profundus* and *ineptus*. Length, 13 to 17 mm.

Holotype, male, DAVIS MOUNTAINS, TEXAS, August 2, 1937; allotype, female, CHISOS MOUNTAINS, TEXAS, July 9, 1936; three paratypes, same data as allotype; three other paratypes from DAVIS MOUNTAINS, TEXAS, July 2, 1940; three paratypes from CHISOS MOUNTAINS, TEXAS, June 9, 1939. All these specimens were collected by D. J. and J. N. Knull. With these I associate six specimens from the Leng Collection, no data. The types will be deposited in the United States National Museum. Paratypes are in the following collections: California Academy of Sciences (2); M. C. Z. (1); Knull (3); author's collection (3).

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<sup>1</sup> Green, J. W., Ent. Am. vol. XX (new series), no. 4, pp. 159-217, 1941.

This species is near *Ch. profundus* Lec. and *Ch. ineptus* Horn and is probably placed in some collections as *profundus*. It can be easily separated from either of these species by the following key:

Species with apical third of elytra black; third antennal segment equal or nearly equal to fourth. (*profundus* group.)

A. Head black.....*ineptus* Horn

AA. Head pale.

B. Larger, 17 to 22 mm.; reddish orange, basal third or less of femora pale; long hairs at apex of antennal segments setaceous.....*profundus* Lec.

BB. Smaller, 13 to 17 mm.; yellowish, basal half or more of femora pale; long hairs at apex of antennal segments fine and silky.....*texanus*, n. sp.

### *Podabrus cascadensis* Fender, new species

Black; head in front of eyes and sides of prothorax rufotestaceous. Head shining; feebly sparsely punctate in front, coarsely punctate behind; slightly wider than the thorax. Eyes small and inconspicuous. Antennae piceous with the exception of the basal segment which is paler; long, reaching to the apical third of the elytra in the male, slightly shorter in the female. Prothorax shining, finely sparsely punctate, more noticeably so just to the rear of the convexities; subrectangular, anterior angles rounded, sides arcuate to hind angles which are prominent; median line slightly impressed, not eroded. Elytra shallowly rugulose basally becoming more deeply so apically; pubescence pale cinereous. Front tibiae curved and apically dilated in male, simple in female. Posterior coxae of male with an apical process of yellowish hairs. Tarsal claws armed with a long acute tooth causing them to appear broadly cleft. Length, 11 to 12 mm.

Holotype, male, allotype, female, and one paratype, July 1, 1941, CLACKAMAS LAKE, OREGON; two paratypes, CLEAR LAKE, ORE., same date; one paratype, HOOD RIVER MEADOWS, ORE., same date. Holotype and allotype in California Academy of Sciences, paratypes in author's collection.

The unguinal characters place this species in Mr. Fall's<sup>2</sup> first group. The small, not prominent eyes would place it with *P. latimanus* (Mots.) and *P. ambiguus* Fall. It can be separated from *latimanus* by the formation of the front tibiae, dilated inwardly into a thin plate in *latimanus*, apically dilated in *cascadensis*; from *ambiguus* by its color, ground color yellow in

<sup>2</sup> H. C. Fall, Ent. Am. Vol. VIII (new series), No. 2, pp. 65-103, 1928.

*amgibuus*, black in *cascadensis*. In reality *cascadensis* is much nearer *P. frater* Lec. and should follow that species in arrangement. In *frater* the eyes are large and prominent; the clypeus is pale basally and dark brunneous apically; the median line of the prothorax is deeply impressed and the elytral costae are prominent. In comparison, *cascadensis* has small, not prominent eyes, the clypeus pale, the median line of the prothorax shallowly impressed and the elytral costae feeble.

#### *Podabrus brunneus* Fender, new species

Brunneous; head, basal two segments of maxillary palpi, under side of basal two segments of antennae and basal half of femora rufo-brunneous; prothorax rufo-brunneous with a large hexagonal discal spot which is piceous. Head shining; finely, sparsely punctate in front of antennae; coarsely, closely punctate behind; as wide as thorax in the male, narrower than the thorax in the female. Antennae narrowly annulated, moderately stout; intermediate segments three times as long as wide; second segment four-fifths as long as third. Prothorax shining; finely, sparsely punctate, coarsely so anteriorly; front angles rounded, sides evenly arcuate to hind angles which are feebly prominent; median line shallow, not eroded, extending only for the length of the convexities. Elytra feebly rugose basally, becoming more evidently rugose apically; each with two evident costae. Anterior tibiae feebly bent and dilated apically. Hind coxae with an apical process of long hairs. Tarsal claws armed with a long acute tooth. Length: male, 15 mm.; female, 16 mm.

Holotype, male, and allotype, female, July 20, 1937, collected by D. J. and J. N. Knull in the HUACHUCA MOUNTAINS, ARIZONA. Holotype temporarily in the author's collection, allotype in the Knull Collection.

This fine species would run, in Fall's key, to *P. diadema* Fab. in the first group; claws with acute tooth causing them to appear broadly cleft. The protibiae of the males are too feebly bent and apically dilated to be placed in that division occupied by *rugulosus* Lec., *frater* Lec., etc. *Brunneus* can easily be separated from *diadema* by its large size and color; *diadema*, ground color black, length 9 to 10 mm.

#### *Podabrus danielsi* Fender, new species

Black, luster dull; head in front of eyes, basal three segments of antennae and sides of prothorax pale; apices of coxae, bases of trochanters, bases and apices of femora and tibiae narrowly pale. Head finely punctate in front; scabrose punctate behind. Anten-



nae stout, second segment one-third longer than wide, three-fourths as long as third; intermediate joints two and a half times as long as wide. Thorax two-thirds as long as wide; slightly narrower than head in male, as wide as head in female; front angles obliquely subtruncate; sides a little sinuate and convergent to hind angles which are prominent; surface finely, closely punctate, becoming nearly rugose punctate anteriorly; convexities less closely punctate; median impressed line deep and eroded. Elytra finely, closely rugose basally, becoming more noticeably so apically; pubescence pale cinereous. Claws of male cleft in front feet; anterior claws of middle and hind feet each with a short acute tooth; posterior claws of middle and hind feet cleft. Each of the claws of the female with a short acute tooth. Length, 6.5 to 7 mm.

Holotype, male, allotype, female, and three paratypes, July 18, 1941, BREITENBUSH LAKE, MT. HOOD NAT. FOREST, OREGON, collected by H. and F. Daniels for whom it is named. Holotype and allotype in California Academy of Sciences; one paratype in the Daniels Collection; two paratypes in the author's collection.

*Danielsi* is unique in the unguis characters of the males. It is similar in shape and coloration to *P. lateralis* Lec. and appears to be near this species. It can at once be separated from any other known species by the formation of the claws of the male. Mr. Fall, in his key, separated the species into seven major groups which are distinguished by the form of the tarsal claws. This species adds another group to those known to Mr. Fall.

#### *Malthodes oregonus* Fender, new species

Male. Head black, wider than thorax; labrum, mandibles and first two antennal segments pale testaceous, rest of antennae piceous, as long as the body; segments two and three of equal length. Thorax pale testaceous with a fuscous discal spot which is sometimes divided by the shallow median excavation; rather coarsely punctate; lateral margin sinuate, anterior angles deflexed. Elytra brunneo-piceous, paler at tips. Protibiae and apex of profemora pale; apex of femora and basal half of tibiae of middle and hind legs pale. Length, 3 to 3.5 mm.

Male genital characters as viewed ventrally: sixth ventral deeply emarginate, emargination not truncate at the bottom; seventh ventral deeply notched, forks diverging at basal half of furcation, becoming nearly parallel at tips (fig. 2); seventh ventral sinuate in profile, the upper surface leveling off to form a narrow triangle; last dorsal produced, arched over last ventral, broadened and truncate at tip, strongly carinate ventrally (fig. 1).

Female. Coloration as in male; thorax wider than head; antennae a little over one-half the length of the body. Length, 3 to 4 mm.

Holotype, male, allotype, female, and 69 paratypes, DAYTON, OREGON, May 16, 1940, D. M. and K. M. Fender; eleven other paratypes have been taken by us at McMinnville, Amity, Boyer and Sand Lake, Ore., on dates ranging from April 7, to June 13. Holotype, allotype and two paratypes in the California Academy of Sciences. Paratypes as follows: U. S. N. M. (2); M. C. Z. (2); Green (4); Frost (2); Oregon State College (2); Knull (2); Malkin (2); the rest temporarily in the author's collection.

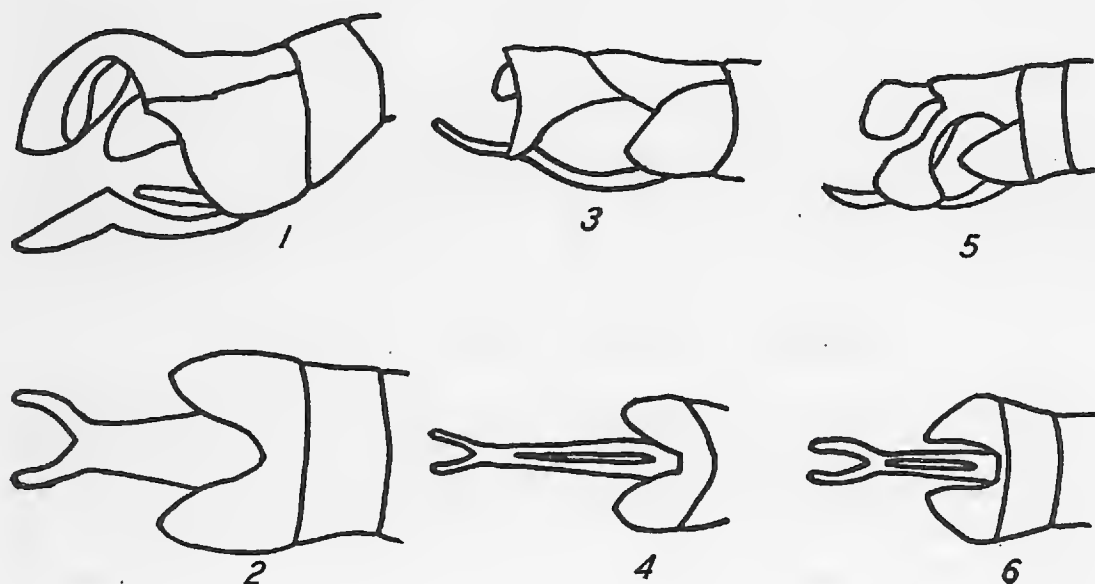


Fig. 1. Lateral view of terminal abdominal segments of *Malthodes oregonus*, n. sp. Fig. 2. Ventral view of terminal ventral abdominal segments of *M. oregonus*, n. sp. Figs. 3 and 4. Same of *Malthodes humidus*, n. sp. Figs. 5 and 6. Same of *Malthodes frosti*, n. sp.

This species is near *M. obductus* Fall but can be separated from that species by its larger size, sinuate thoracic margin and more divergent forks of the male seventh ventral.

#### *Malthodes frosti* Fender, new species

Male. Head black, antennae entirely piceous, as long as body; second and third antennal segments about the same length, fourth a little longer, intermediate segments four times as long as wide. Thorax brunneous to rufo-testaceous, transverse, narrower than head; lateral margins sinuate, quite widely margined. Elytra piceous, reaching to apical half of abdomen. Length, 3 to 3.5 mm.

Male genital characters as viewed ventrally: sixth ventral narrowly deeply emarginate, emargination truncate at bottom; seventh ventral elongate, deeply, broadly divided (fig. 6); seventh ventral strongly sinuate in profile; sides of last dorsal projecting downward, thence backward and expanded into large ovate

lateral processes enclosing the last ventral; terminus of last dorsal with a short, narrow median keel projecting downward (fig. 5).

Female. Coloration as in male; thorax wider than head, lateral margins divergent from basal angles for three-fourths of their length, then strongly convergent to the anterior angles. Antennae about one-half the length of the body. Length, 3.5 mm.

Holotype, male, allotype, female, and 21 paratypes, BEAR SPRINGS, WAPINITIA CUTOFF, OREGON, June 6, 1939; eight paratypes, ELK LAKE, ORE., July 9, 1939; two paratypes, McMinnville, ORE., May 23, 1938, and one paratype, McMinnville, ORE., July 30, 1939; all collected by D. M. and K. M. Fender. Holotype and allotype in the California Academy of Sciences. Paratypes as follows: U. S. N. M. (2); M. C. Z. (2); Green (2); Frost (2); Malkin (2); the rest in the author's collection.

#### *Malthodes humidus* Fender, new species

Color piceous, seventh ventral and sixth dorsal abdominal segments pale. Eyes large; antennae as long as body in male, shorter in female; second antennal joint slightly shorter than third, third slightly shorter than fourth, rest of segments nearly equal in length. Thorax narrower than head in male, wider than head in female; lateral margins convergent from the anterior angles, slightly sinuate in female; lateral margins convergent from the anterior angles, slightly sinuate, anterior angles deflexed. Length, 3 to 3.5 mm.

Male genital characters as follows: sixth ventral narrowly deeply emarginate, emargination faintly truncate at the bottom; seventh ventral slender, elongate, deeply, broadly divided at apex (fig. 4). In profile: seventh ventral sinuate; sides of sixth dorsal curved down and back into finger-like processes; terminus of sixth dorsal with a ventrally and posteriorly directed median lobe (fig. 3).

Holotype, male, allotype, female, and 14 paratypes, BOYER, OREGON, May 28, 1940. The following paratypes all were taken by Professor James A. Macnab at BOYER, ORE., (2) July 19, 1938, (1) July 23, 1934, (1) July 14, 1935, (1) June 28, 1936, and (1) July 23, 1937.

Variation: In some specimens there is a rufo-testaceous spot on each side of the thoracic disc; others have a noticeable tubercle on each side of the disc.

This species keys out to *M. tularensis* Fall but can be distinguished from that species by its piceous color; third anten-



nal segment noticeably longer than second and the produced downcurved side pieces of the sixth dorsal of the male. In *tularensis* the thorax is yellowish, the third antennal segment is scarcely longer than the second and the sixth dorsal is not produced.

*Malthodes frosti* and *M. humidus* both run to the last couplet in Mr. Fall's study<sup>3</sup>. In this subhead Mr. Fall had already placed *M. tularensis* and *M. visceratus* Fall. A revision of this couplet might be appropriate to include the new species mentioned above.

Emargination of the sixth ventral truncate at bottom.

- A. Seventh ventral sinuate in profile, less widely and deeply forked.
  - B. Last dorsal not produced.....*tularensis* Fall
  - BB. Last dorsal produced, side pieces projecting downwards.
  - C. Last dorsal side pieces projecting downwards, forming fingerlike processes.....*humidus*, n. p.
  - CC. Last dorsal side pieces projecting downwards and expanding into large ovate lateral processes.....*frosti*, n. p.
- AA. Seventh ventral apically bent, more widely and deeply forked
  - .....*visceratus* Fall

## INSECT ENEMIES OF THE SCARABAEID *POLYPHYLLA* *CRINITA* LEC.

(Coleoptera: Scarabaeidae)

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In western Washington the Scarabaeid June beetle, *Polyphylla crinita* Lec.<sup>1</sup>, emerges from its pupal cell in the ground from about the first half of July into August. On Whidbey Island, State of Washington, the larvae of this beetle are present in great numbers in well-drained medium and lighter sandy soils; locally causing damage in commercial strawberry fields and Dutch iris bulb plantings.

While collecting specimens of *Polyphylla crinita* on Whidbey Island July 11, 1939, I saw one of these beetles flying pursued by two robber flies, *Stenopogon inquinatus* Loew. One of these

<sup>3</sup> H. C. Fall, Ann. Ent. Soc. Am. Vol. XII, No. 1, pp. 31-42, 1919.

<sup>1</sup> According to Essig, on Vancouver Island, British Columbia, and along the Pacific Coast the species of *Polyphylla* is *P. crinita* Lec. See reference, E. O. Essig, Insects of Western North America, The Macmillan Company, p. 443. 1934.